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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Longxiang Bian

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EXAMINER

ANDLER, MICHAEL S

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/558,880	Applicant(s) BIAN, LONGXIANG	
	Examiner Michael Andler	Art Unit 2876	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 2005 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The examiner acknowledges and has entered the amendments/arguments filed 24 February 2009.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims **1-7** are rejected under 35 U.S.C. 101 for containing nonfunctional descriptive material and nonstatutory computer-related subject matter.

Regarding claims **1-5**, to paraphrase, applicant claims a machine-readable medium including "symbols disposed on nodes arranged in the form of a matrix" where nodes are "cells" according to the special definition in the specification (See section 0028) and a cell is further understood to designate the intersection of a row and column in the matrix as shown in Figures 2a and 2b. Applicant further claims that the symbols can be control characters or information characters. In the specification, applicant discloses the sequence but not the manner in which symbols are disposed on the cells, nor does the applicant disclose the form or nature of the claimed matrix. When viewed within the plain and ordinary meaning of the terms, applicant is claiming printed matter, i.e. symbols representing characters, that are printed on paper (a medium) in the form of a matrix (disposed on nodes) and readable by an optical character recognition device (machine readable). Printed matter, when recorded on a computer-readable substrate and otherwise absent a new and unobvious functional relationship between the printed

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matter and the substrate, is nonfunctional descriptive material that does not constitute a statutory process, machine, manufacture, or composition of matter and is therefore not patentable. See MPEP 2106.01.

Regarding claims **1-5**, applicant claims the element of "directional symbols" which, when read in light of the specification, consist of "30 (individual) data bits" that clearly represent data structures (See specification, sections 0039 and 0040). The claim further recites that the symbols are "disposed on nodes arranged in the form of a matrix" which is not a structure that is recognizable as a computer-readable medium. Although the applicant has amended the preamble of the claim to recite "an optical machine-readable medium", the applicant has not clearly defined a structure or manner within the medium in which the claimed nodes are embodied, which leads the examiner to again conclude that the symbols are printed on the medium, which takes the form of paper. Data structures not claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. See, e.g., Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 and MPEP 2106.01, Section I.

Regarding claims **6 and 7**, applicant claims a method for recognizing a system as in claim **1**, that includes the steps of "reading encoding information at said nodes within said matrix" and "extracting said directional symbols". Although the applicant has amended the preamble of claim **1** to recite "an optical machine-readable medium, the applicant has not clearly defined a structure or manner within the medium in which the claimed nodes are embodied, nor does applicant specify a specific structure for reading

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the information and extracting the symbols as recited in claim **6**. Thus the method of claims **6 and 7** are not tied to a particular machine or transform a particular item and therefore, are not patentable subject matter. See *In Re Bilski*, Appeal No. 2007-1130, (Fed. Cir. October 30, 2008).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

a) Claim **1**, related to a medium, and method claim **6** are rejected under 35 U.S.C. 102(b) as being anticipated by Uhling (US 5,984,193).

Regarding claims **1 and 6**, Uhling discloses a medium including:

an encoding region consisting of nodes arranged in a form of matrix (See Fig 3, item 36: bi-directionally coded tiles and Col 3, lines 22-26: "a 10 by 10 matrix of square pixels...unprinted for a "0" value, or printed for a "1" value" where a pixel is something capable of having data bits stored thereon and the matrix of pixels is understood to be the encoding region),

an encoding information sequence is disposed sequentially in two dimensions on said nodes of said matrix in one direction (See Fig 3, where the one direction is either left to right in rows or top to bottom in columns, depending on the type of sensor used) and in a reversible order (See for example, Fig 3, row 1, where the disposed information

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sequence is 1,0, 1,0, 1, 1,0, 1, 1, 1 when read from left to right, and 1, 1, 1,0, 1, 1,0, 1,0, 1 when read from right to left and it is further understood that any linear sequence is in a "reversible order" to the reader when read in the opposite direction and that bi-directional capability for reading linear information in bar codes is well known in the art) and comprises

directional symbols (Col 3, lines 15-16: "the tile code begins with an initial "1, 0" identifier, although other patterns may be used"), wherein said directional symbols are arranged at specific locations having bilateral symmetry in said encoding information sequence (See Fig 3 and Col 3, lines 36-37, where tiles (1,1) and (1,2) correspond to tiles (1,1) and (2,1) which are "symmetrical about a diagonal axis 40" and both contain an initial 1,0 pattern where "bilateral symmetry" is defined as "symmetry about a fixed line in a plane (line of symmetry)"),

said direction in which said encoding information sequence is disposed on said nodes of said matrix is identified by a combination of said specific locations and values of said directional symbols (See previous argument).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

a) Claims **2-4**, related to a system, and method claim **7** are rejected under 35 U.S.C.

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103(a) as being unpatentable over Uhling (US 5,984,193) in view of Ackley (US 5,619,027).

Regarding claims **2 and 7**, Uhling discloses all the limitations of claims **1 and 6**, respectively, and wherein said directional symbols comprise error-correcting symbols (See Fig 3 and Col 1, line 26, and 30-31: "paper size, type, and orientation...existing media has been provided with bar coded identifying data for scanning by a printer" which are types of general information that would be stored in the bar code).

Uhling suggests that optical sensors in the printer are "positioned to read conventional bar codes" and that "widths and spaces may be varied over a range of detectable values to encode more information, in the manner of a conventional bar code" (Col 3, lines 52-54).

Uhling does not specifically teach wherein said directional symbols comprise data symbols.

Ackley discloses wherein said directional symbols comprise data symbols (See Figs 1: character value 23; Fig 12, item ck: check character and Col 13, lines 9-11:"the check character, produced by the above modulo 53 method, provides a character value of 23, which corresponds to the data character "~').

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to include a check character in a bar code symbol, in order provide a symbol character "whose value is used to perform a mathematical check that determines whether the symbol has been decoded correctly" (Ackley, Col 3, lines 25-29).

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Regarding claim **3**, Uhling as modified by Ackley, as applied to claim **2** above, discloses all the limitations of claim **2**.

Uhling discloses wherein said directional symbols consist of symbols S11, S10, ..., S1, S0, STA, R1, R2, R3, R4, STO, S'0, S'1, ..., S'10, S'11, which comply with a relationship as follow:

a symbol sequence {STO, R4, R3, R2, R1, STA, S0, S1, ..., S10, S11} acts as one BCH (18, 6) error-correcting code sequence (See Fig 3, where the rows of data read from left to right are one set of data bits), a symbol sequence {STA, R1, R2, R3, R4, STO, S'0, S'1, ..., S'10, S'11} acts as another BCH (18, 6) error-correcting code sequence (See Fig 3, where the columns of data read from top to bottom are a second set of data bits),

S0~S11 and S'0~S'11~ are said error-correcting symbols belonging to said error-correcting code sequences (See argument in claim 2 regarding error-correcting symbols), and

wherein symbol STA functions is a data symbol that functions as a locating control character indicating said direction (Col 3, lines 15-16: "the tile code begins with an initial "1, 0" identifier (Start character), although other patterns may be used').

Uhling also suggests that optical sensors in the printer are "positioned to read conventional bar codes" and that "widths and spaces may be varied over a range of detectable values to encode more information, in the manner of a conventional bar code" (Col 3, lines 52-54).

Uhling does not specifically teach wherein: symbols STO and R1~R4 are said data symbols, symbol STO function as locating control characters indicating said direction, and R1~R4 functions as normal information characters.

Ackley discloses wherein:

symbols STO and R1~R4 are said data symbols (See Fig 4: STOP and Figs 5-8: Functions 1-4 where the labels of F1, F2, F3 and F4 are equivalent to the labels R1~R4),

symbol STO functions as a locating control character indicating said direction (See Fig 4 and Col 4, lines 35-36: "that employs specific start/stop characters that allow for bidirectional scanning" where it is well known in the art that bar codes that are read in a linear, sequential fashion as described by the applicant are easily readable bi-directionally by interpreting whether the start or stop character is scanned first),

R1~R4 functions as normal information characters (See Col 5, lines 9-10: "four function characters that have exceptional utility such as the function characters in the Code 128 symbology" and Col 8, lines 54-55: "provide special functions established for a given reader or industry").

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to include STOP and functional characters in a bar code symbol in order to provide characters "that allow for bidirectional scanning and focus determination" and to add "exceptional utility...such as Code 128" to the bar code symbology (See Ackley, Col 4, lines 35-36 and Col 5, lines 9-10).

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Regarding claim **4**, Uhling discloses wherein said directional symbols are arranged at said specific locations having bilateral symmetry in such a way that: said directional symbols R2, R1, STA, S0, S1, ..., S10, S11 correspond to locations within left half part of said encoding information sequence according to a distributional rule (See Fig 3, where the set of data to the left of diagonal 40 is the left hand part which is distributed according to a rule of bilateral symmetry), and

said directional symbols R3, R4, STO, S'0, S'1, ..., S'10, S'11 correspond to locations within right half part of said encoding information sequence according to said distributional rule (See Fig 3, where the set of data to the right of diagonal 40 is the left hand part which is distributed according to a rule of bilateral symmetry).

b) Claim **5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Uhling (US 5,984,193), as modified by Ackley (US 5,619,027), as applied to claim **4** above, and further in view of admissions of prior art by Bian in the specification.

Regarding claim **5**, Uhling as modified by Ackley, as applied to claim **4** above, discloses all the limitations of claim **4**.

Uhling also suggests that optical sensors in the printer are "positioned to read conventional bar codes" and that "widths and spaces may be varied over a range of detectable values to encode more information, in the manner of a conventional bar code" (Col 3, lines 52-54).

Uhling, as modified by Ackley, does not specifically disclose wherein said distributional rule complies with an analog random discrete distribution.

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Bian discloses wherein said distributional rule complies with an analog random discrete distribution (See section 0036, lines 15-18: "reversible sequences can be formed by a variety of distributional rules...and how to select a distributional rule or order is well known by the skilled in the art").

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use an analog random discrete distribution rule to arrange data at specific locations in a bilaterally symmetry bar code so the pattern "may be detected by either type of sensor, and regardless of orientation of the sheet" (See Uhling, Col 2, lines 52-54).

Response to Arguments

5. Applicant's arguments filed 24 February 2009 have been fully considered but they are not persuasive.

Regarding claims **1 and 6** and their respective dependents, applicant has amended claim **1** to clarify that the claimed "encoding information sequence" is disposed sequentially "in two dimensions" and has argued that the cited reference (Uhling US 5,984,193) does not teach "a reversible order as it relates to a two-dimensional bar code" and further that the sequence is "disposed in both a plurality of rows and a plurality of columns".

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a "two-dimensional bar code" and "a plurality of rows and columns") are not recited in the rejected claim(s) since the claim language merely recites "a medium for recording

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two-dimensional bar code” and not a two-dimensional bar code per se. Furthermore, there is no claimed limitation of “a plurality of rows and columns”, merely a matrix which can be interpreted as a 1 X 1 matrix with a single row and a single column. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

As applicant points out on page 5 of the arguments filed on 24 February 2009, Uhling teaches encoded information that is encoded “once in a row, and again in a column”, which is equivalent to the claimed limitation of “disposed sequentially in two dimensions”.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Andler whose telephone number is (571) 270-5385. The examiner can normally be reached on Monday-Friday 7:30 AM to 3:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lee can be reached on (571) 272-2398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Andler/
Examiner, Art Unit 2876

/Michael G Lee/
Supervisory Patent Examiner, Art Unit 2876